

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
20 October 2005 (20.10.2005)

PCT

(10) International Publication Number
WO 2005/096726 A2

(51) International Patent Classification: Not classified

(21) International Application Number:
PCT/US2005/010216

(22) International Filing Date: 25 March 2005 (25.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/556,429 26 March 2004 (26.03.2004) US

(71) Applicant (for all designated States except US): LUNA
INNOVATIONS INCORPORATED [US/US]; 2851
Commerce Street, Blacksburg, Virginia 24060 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): KLEMER, Daniel,
R. [US/US]; 900 B7 Brightwood Manor, Blacksburg,
Virginia 24060 (US). GAUSE, Charles, B. [US/US];
228 Lakeside Lane, Providence, North Carolina 27315
(US). STEVENSON, Steven, A. [US/US]; 508 Alleghany
Street, Blacksburg, Virginia 24060 (US).

(74) Agents: DADIO, Susan, M. et al.; Burns, Doane,
Swecker & Mathis, LLP, P. O. Box 1404, Alexandria,
Virginia 22313-1404 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,
ZM, ZW.

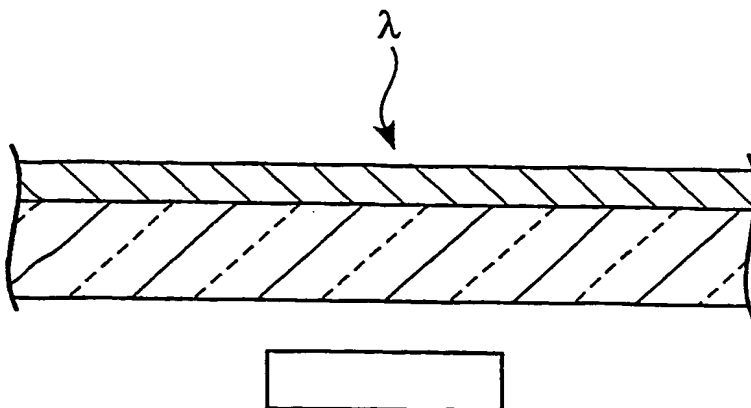
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: OPTICAL LIMITER HAVING TRIMETALLIC NITRIDE ENDOHEDRAL METALLOFULLERENE FILMS



(57) Abstract: An exemplary optical
limiter device has an optically transmissive
substrate and a layer on a first surface of
the substrate, the layer having a trimetallic
nitride endohedral metallofullerenes. The
layer can be a thin film of the trimetallic
nitride endohedral metallofullerene, a layer
material with a cavity containing a solution
with the trimetallic nitride endohedral
metallofullerene, a sol-gel with a trimetallic
nitride endohedral metallofullerene, and a
self assembled monolayer with a trimetallic
nitride endohedral metallofullerene. The
layers of trimetallic nitride endohedral
metallofullerenes can be vapor deposited,
solution deposited and/or self-assembled
onto optical components. The third-order

nonlinear properties of these films provide desired transmission characteristics.

WO 2005/096726 A2